

**FINAL
ENVIRONMENTAL ASSESSMENT
FOR THE PROPOSED TEN MILE RIM COAL
LEASE-BY-APPLICATION AND ASSOCIATED RIGHTS-OF-WAY,
SWEETWATER COUNTY, WYOMING**

WY-040-EA04-060

**As Applied for by Bridger Coal Company
(Federal Coal Lease Application WYW-154595)**

Prepared for

**Bureau of Land Management
Rock Springs Field Office
Rock Springs, Wyoming**

In Cooperation with

**Office of Surface Mining Reclamation and Enforcement
Western Regional Coordinating Center
Denver, Colorado**

This Environmental Assessment was prepared by TRC Mariah Associates Inc., an environmental consulting firm, with guidance, participation, and independent evaluation of the Bureau of Land Management (BLM). The BLM, in accordance with Title 40 Code of Federal Regulations, Part 1506(a) and (b), is in agreement with the findings of the analysis and approves and takes responsibility for the scope and content of this document.

June 2004

TABLE OF CONTENTS

	<u>Page</u>
1.0 INTRODUCTION.....	1
1.1 BACKGROUND.....	1
1.2 PURPOSE AND NEED	5
1.3 CONFORMANCE WITH LAND USE PLANS AND RELATIONSHIP TO STATUTES, REGULATIONS, AND OTHER PLANS	6
1.3.1 BLM Resource Management Plan	6
1.3.2 Existing NEPA Documents.....	8
1.3.3 Review of Select Permits, Approvals, and Authorizations	9
1.3.3.1 OSM Requirements	9
1.3.3.2 Department of Justice Consultation	10
1.3.3.3 WDEQ Requirements.....	10
1.3.3.4 Wyoming State Engineer's Office (WSEO) Requirements.....	11
1.3.3.5 Wyoming Office of State Lands and Investment (WOSLI) Requirements.....	11
1.3.3.6 Sweetwater County Requirements	11
1.3.4 Public Involvement	12
2.0 THE PROPOSED ACTION AND ALTERNATIVES	13
2.1 PROPOSED ACTION	13
2.1.1 Overview	13
2.1.2 Mine Permit and Other Required Permits/Approvals	15
2.1.3 Resource Recovery and Protection Plan	16
2.1.4 Description of the TMRT Area	16
2.1.5 Mine Plan	17
2.1.5.1 Location and Description of Additional Mine Facilities	18
2.1.5.2 Mine Equipment.....	25
2.1.5.3 Nature of Coal and Coal Reserves	28
2.1.5.4 Mining Methods	29
2.1.5.5 Mine-Water Discharge and Treatment.....	34
2.1.5.6 Water Requirements	34
2.1.5.7 Control of Toxic, Hazardous, and Solid Waste Materials	35
2.1.5.8 Subsidence and Associated Reclamation	37
2.1.5.9 Reclamation of Mine Facilities	38
2.1.5.10 Avoidance of Public Nuisance and Endangerment	39
2.1.5.11 Employment	41
2.1.5.12 Cultural Resource Protection	42
2.1.5.13 General Environmental Protection.....	43
2.2 NO ACTION ALTERNATIVE	43

TABLE OF CONTENTS (CONTINUED)

	<u>Page</u>
2.3 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED STUDY.....	44
2.3.1 Hold a Competitive Sale of Federal Coal Lands that Would Maximize the Potential for a New Stand-alone Mine	45
2.3.2 Smaller Sale Area.....	46
2.3.3 Larger Sale Area (Originally Applied-for LBA Tract)	47
2.3.4 Postpone Competitive Lease Sales.....	48
2.3.5 Hold a Competitive Sale of Federal Coal Lands as a Continuation of Existing Surface Coal Mining Operations	49
3.0 AFFECTED ENVIRONMENT	51
3.1 LOCATION, SETTING, AND HISTORICAL USE.....	51
3.2 CRITICAL ELEMENTS.....	52
3.3 AFFECTED RESOURCES.....	55
3.3.1 Air Quality and Noise	55
3.3.1.1 Air Quality	55
3.3.1.2 Noise	58
3.3.2 Cultural Resources	60
3.3.3 Geology and Geologic Hazards	62
3.3.4 Health and Safety (Transportation).....	65
3.3.5 Land Resources and Use	65
3.3.6 Minerals (Solid and Fluid)	66
3.3.6.1 Leasable Solid Minerals (Coal).....	66
3.3.6.2 Leasable Fluid Minerals (Oil, Gas, and Coalbed Methane).....	68
3.3.6.3 Locatable Minerals.....	70
3.3.6.4 Salable Minerals.....	70
3.3.7 Native American Religious Concerns	70
3.3.8 Paleontological Resources	71
3.3.9 Rangeland and Livestock Grazing	72
3.3.10 Recreation	72
3.3.11 Socioeconomics.....	76
3.3.12 Soil Resources	78
3.3.13 TEC&P and BLM-sensitive Species	78
3.3.13.1 Introduction	78
3.3.13.2 Federally Listed Animal and Plant Species	80
3.3.13.3 BLM-sensitive Animal and Plant Species.....	86
3.3.14 Vegetation (Including Invasive Species)	86
3.3.15 Wastes (Hazardous and Solid)	90

TABLE OF CONTENTS (CONTINUED)

	<u>Page</u>
3.3.16 Water Resources.....	91
3.3.16.1 Surface Water Resources	91
3.3.16.2 Groundwater Resources	93
3.3.17 Wetlands/Riparian Areas	94
3.3.18 Wild Horses.....	95
3.3.19 Wildlife.....	99
3.3.19.1 Big Game.....	99
3.3.19.2 Other Mammals.....	108
3.3.19.3 Raptors	108
3.3.19.4 Upland Game Birds.....	109
3.3.19.5 Other Birds	112
3.3.19.6 Amphibians, Reptiles, and Fish	114
4.0 ENVIRONMENTAL CONSEQUENCES.....	115
4.1 AIR QUALITY AND NOISE.....	116
4.1.1 Air Quality	116
4.1.1.1 Proposed Action	116
4.1.1.2 No Action Alternative	120
4.1.1.3 Residual Impacts	120
4.1.1.4 Cumulative Impacts.....	120
4.1.2 Noise	122
4.1.2.1 Proposed Action	122
4.1.2.2 No Action Alternative	123
4.1.2.3 Residual Impacts	123
4.1.2.4 Cumulative Impacts.....	123
4.2 CULTURAL RESOURCES	124
4.2.1 Proposed Action	124
4.2.2 No Action Alternative	125
4.2.3 Residual Impacts	126
4.2.4 Cumulative Impacts.....	126
4.3 GEOLOGY AND GEOLOGIC HAZARDS.....	127
4.3.1 Proposed Action	127
4.3.2 No Action Alternative	130
4.3.3 Residual Impacts	130
4.3.4 Cumulative Impacts.....	130
4.4 HEALTH AND SAFETY (TRANSPORTATION).....	131
4.4.1 Proposed Action	131
4.4.2 No Action Alternative	133
4.4.3 Residual Impacts	133
4.4.4 Cumulative Impacts.....	133

TABLE OF CONTENTS (CONTINUED)

	<u>Page</u>
4.5 LAND RESOURCES AND USE.....	134
4.5.1 Proposed Action	134
4.5.2 No Action Alternative	134
4.5.3 Residual Impacts	134
4.5.4 Cumulative Impacts.....	135
4.6 MINERALS (SOLID AND FLUID).....	135
4.6.1 Proposed Action	135
4.6.2 No Action Alternative	137
4.6.3 Residual Impacts	137
4.6.4 Cumulative Impacts.....	138
4.7 NATIVE AMERICAN RELIGIOUS CONCERNS	138
4.7.1 Proposed Action	138
4.7.2 No Action Alternative	138
4.7.3 Residual Impacts	139
4.7.4 Cumulative Impacts.....	139
4.8 PALEONTOLOGICAL RESOURCES	139
4.8.1 Proposed Action	139
4.8.2 No Action Alternative	140
4.8.3 Residual Impacts	140
4.8.4 Cumulative Impacts.....	140
4.9 RANGELAND AND LIVESTOCK GRAZING	141
4.9.1 Proposed Action	141
4.9.2 No Action Alternative	142
4.9.3 Residual Impacts	142
4.9.4 Cumulative Impacts.....	142
4.10 RECREATION.....	144
4.10.1 Proposed Action	144
4.10.2 No Action Alternative	146
4.10.3 Residual Impacts	147
4.10.4 Cumulative Impacts.....	147
4.11 SOCIOECONOMICS	147
4.11.1 Proposed Action	147
4.11.2 No Action Alternative	149
4.11.3 Residual Impacts	151
4.11.4 Cumulative Impacts.....	151
4.12 SOIL RESOURCES.....	152
4.12.1 Proposed Action	152
4.12.2 No Action Alternative	153

TABLE OF CONTENTS (CONTINUED)

	<u>Page</u>
4.12.3 Residual Impacts	153
4.12.4 Cumulative Impacts.....	153
4.13 THREATENED, ENDANGERED, CANDIDATE, PROPOSED, AND SENSITIVE SPECIES	154
4.13.1 Proposed Action	154
4.13.1.1 Black-footed Ferrets.....	154
4.13.1.2 Bald Eagle	155
4.13.1.3 BLM-sensitive Species.....	155
4.13.2 No Action Alternative	156
4.13.3 Residual Impacts	156
4.13.4 Cumulative Impacts.....	157
4.14 VEGETATION (INCLUDING INVASIVE SPECIES)	157
4.14.1 Proposed Action	157
4.14.2 No Action Alternative	160
4.14.3 Residual Impacts	160
4.14.4 Cumulative Impacts.....	160
4.15 WASTES (HAZARDOUS AND SOLID)	161
4.15.1 Proposed Action	161
4.15.2 No Action Alternative	162
4.15.3 Residual Impacts	162
4.15.4 Cumulative Impacts.....	163
4.16 WATER RESOURCES.....	163
4.16.1 Surface Water Resources	163
4.16.1.1 Proposed Action	163
4.16.1.2 No Action Alternative	164
4.16.1.3 Residual Impacts	165
4.16.1.4 Cumulative Impacts.....	165
4.16.2 Groundwater Resources	166
4.16.2.1 Proposed Action	166
4.16.2.2 No Action Alternative	170
4.16.2.3 Residual Impacts	170
4.16.2.4 Cumulative Impacts.....	170
4.17 WETLANDS AREAS.....	172
4.17.1 Proposed Action	172
4.17.2 No Action Alternative	173
4.17.3 Residual Impacts	173
4.17.4 Cumulative Impacts.....	173
4.18 WILD HORSES	174
4.18.1 Proposed Action	174
4.18.2 No Action Alternative	174

TABLE OF CONTENTS (CONTINUED)

	<u>Page</u>
4.18.3 Residual Impacts	175
4.18.4 Cumulative Impacts.....	175
4.19 WILDLIFE	176
4.19.1 Proposed Action	176
4.19.1.1 Big Game.....	176
4.19.1.2 Other Mammals.....	178
4.19.1.3 Raptors	178
4.19.1.4 Upland Game Birds.....	180
4.19.1.5 Other Birds	182
4.19.1.6 Amphibians, Reptiles, and Fish	183
4.19.2 No Action Alternative.....	183
4.19.3 Residual Impacts	183
4.19.4 Cumulative Impacts.....	184
4.20 MITIGATION MEASURES.....	192
4.21 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES	199
4.22 SHORT-TERM USE OF THE ENVIRONMENT VERSUS LONG-TERM PRODUCTIVITY	199
5.0 RECORD OF PERSONS, GROUPS, AND GOVERNMENTAL AGENCIES CONTACTED.....	201
6.0 REFERENCES.....	203
APPENDIX A: STANDARD COAL LEASE FORM AND SPECIAL LEASE STIPULATIONS	
APPENDIX B: COMMENTS AND RESPONSES ON THE DRAFT ENVIRONMENTAL ASSESSMENT	
APPENDIX C: BLM DETERMINATION LETTER TO USFWS	

LIST OF FIGURES

	<u>Page</u>
Figure 1.1 General Project Location.....	2
Figure 2.1 Mineral Ownership Within the TMRT	14
Figure 2.2 Typical Surface Support Facilities Layout.....	20
Figure 2.3 Major Transportation Systems	21
Figure 2.4 Powerline System.....	23
Figure 2.5 Proposed Mine Access Roads	26
Figure 2.6 Typical Continuous Mining Equipment.....	29
Figure 2.7 Typical Longwall Panel with Main Entry and Submain Entry	30
Figure 2.8 Typical Longwall Mining System.....	32
Figure 2.9 Close-up of Major Components of Longwall Mining System.....	33
Figure 2.10 Typical Trough Subsidence Due to Longwall Mining.....	33
Figure 3.1 Air Quality CIAA.....	59
Figure 3.2 Location of the Point of Rocks to South Pass Wagon Road	63
Figure 3.3 Surface Landownership in the TMRT Area and Vicinity	67
Figure 3.4 Oil and Gas Potential Within the TMRT and Vicinity	69
Figure 3.5 Livestock Grazing Allotment Within the TMRT Area and CIAA	73
Figure 3.6 Location of CDNST	75
Figure 3.7 Soil Map Units Within the TMRT and CIAA.....	79
Figure 3.8 Major Vegetation Communities Within the TMRT and CIAA (as of January 2000).....	89
Figure 3.9 Surface Water Drainages and Features Located Within the TMRT and CIAA	92
Figure 3.10 Production Water Wells	96

LIST OF FIGURES (CONTINUED)

	<u>Page</u>
Figure 3.11 Potential Wetlands Located Within the TMRT and CIAA (as of 1983).....	97
Figure 3.12 Great Divide Basin Wild Horse Herd Management Area.....	98
Figure 3.13 Pronghorn Antelope Range Within the TMRT	100
Figure 3.14 Pronghorn Antelope Range Within the TMRT	102
Figure 3.15 Mule Deer Range Within the TMRT and Vicinity	103
Figure 3.16 Mule Deer Range Within the CIAA.....	104
Figure 3.17 Elk Range Within the TMRT and Vicinity	106
Figure 3.18 Elk Range Within the CIAA	107
Figure 3.19 Raptor Nests Within the TMRT and Vicinity	110
Figure 3.20 Greater Sage-grouse Leks Within the TMRT	111
Figure 3.21 Greater Sage-grouse Leks Within the CIAA	113

LIST OF TABLES

	<u>Page</u>
Table 2.1 Description of TMRT.....	17
Table 2.2 Acres Affected by the Proposed Action.....	18
Table 2.3 Typical Major Equipment	27
Table 3.1 Critical Elements of the Human Environment	53
Table 3.2 Selected National and Wyoming Air Quality Standards.....	56
Table 3.3 Comparison of Measured Noise Levels with Commonly Heard Sounds, TMRT and CIAA, 2003	61
Table 3.4 Federal Threatened, Endangered, Proposed, and Candidate Species and Their Potential Occurrence Within the Proposed Project Area, 2003	81

LIST OF TABLES (CONTINUED)

	<u>Page</u>
Table 3.5 Wyoming BLM Sensitive Species and Habitat Preference, TMRT and CIAA, 2003	87
Table 3.6 Major Vegetation Communities Within the TMRT and CIAA	90
Table 4.1 Acres of Disturbance by CIAA for Big Game Species.....	185
Table 5.1 Record of Persons, Groups, and Governmental Agencies Contacted	201
Table 5.2 List of Preparers	202
Table 5.3 List of Contributors and Reviewers	202